### Final Package Results

January 29, 2018



# Development of Final Package

- Goal is to improve accessibility of the Lower Mystic region while reducing single occupant vehicle use
- Tested over 25 project and policy ideas
- Identified 8 multi-modal solutions for improving travel in and around Sullivan Square
- Final Package ideas complement each other
- No one option solves the transportation problems



#### Overview of Benefits

- Orange Line headway improvements have regional benefits and help reduce crowding and wait times of travelers
- Local buses are modified to complement Orange Line & BRT services and improve connectivity and access
- Reductions to the auto availability of households in the study area increases overall trip making and this leads to more non-SOV trips
- New Silver Line service works well with Orange Line improvements
- Final Package reduces SOV use in the study area and provides some help reducing congestion in the area



#### Multi-modal Improvements

- Improved Orange Line Headways
- Silver Line BRT Service
- Modified Bus Service
- Land Use / Parking Policy
- Bicycle & Pedestrian Infrastructure
- Revised City Square On-ramp (I-93 NB)



#### **Orange Line**



- Current peak period headway is 6 minutes.
- Future 2040 headway improves to 4.5 minutes due to the new vehicle purchases.
- Final package improves headway to 3 minutes.
- This has regional benefits along with local benefits near Sullivan Square.
- Provides additional capacity to accommodate future growth.



#### Silver Line Service



- New SL Chelsea to Kendall Square operating at 10 minute headways
- New SL Glendale Square to North Station operating at 10 minute headway
- Using bus lanes on upper and lower Broadway in the Southbound direction only
- Using bus lanes on selected roadways in East Cambridge
- Commuter Rail ROW saves 7 minutes of travel time for Chelsea to Kendall service

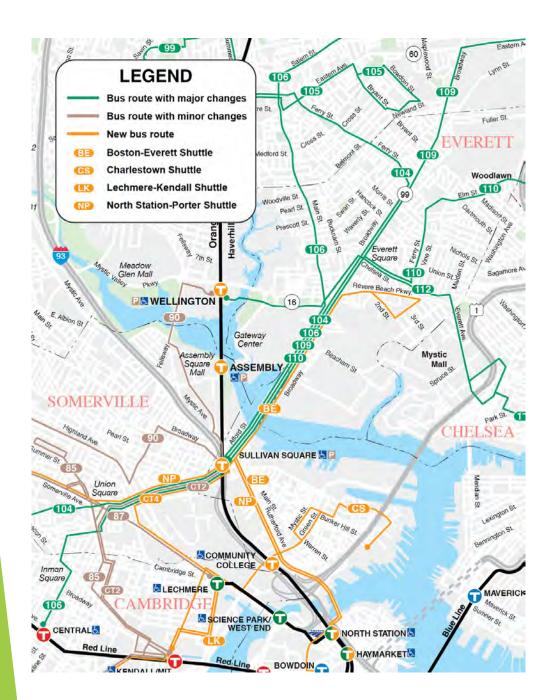


#### **Local Bus Modifications**

- Selected routes from Alternative 3 modified
- Buses modified to act as feeders and eliminate redundant service for Routes
   (85, 87, 90, 92A, 99, 104, 105, 109, 109, 110, & 112)
- Four new routes added

Charlestown Shuttle, Porter to North Station, Lechmere to Kendall, & CT4 variant





Local Bus Service And New Routes



# Bicycle and Pedestrian Infrastructure

- Complete Streets concept in local area (Improved sidewalk and bike lanes)
- Mystic River Bike/Pedestrian Bridge
- Northern Strand Connection Across Rte. 16
- Malden River Bridge
- Somerville Community Path







#### Land Use Policies

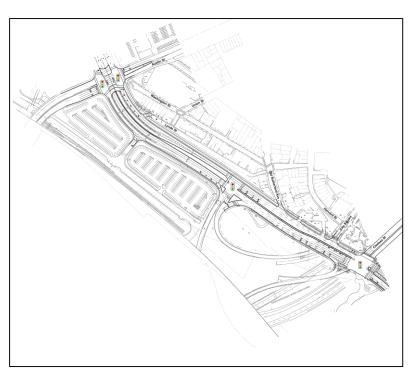
- Make it less desirable for employees to drive to businesses in the study area by adding a cost to park using market rates.
- Reduce the number of parking spaces available to new households in the impact area.
  - Reduced parking leads to reduced auto ownership
  - Reduction in auto ownership increases overall trip making. Several short trips non-motorized/transit are created for each long trip made with an auto.







# New City Square, Rutherford Ave., I-93 NB On-Ramp Map

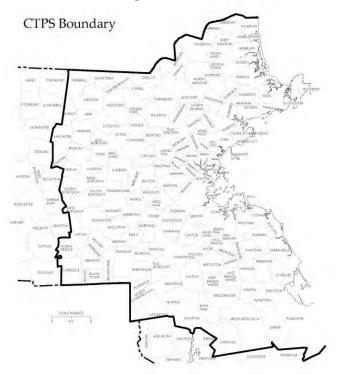




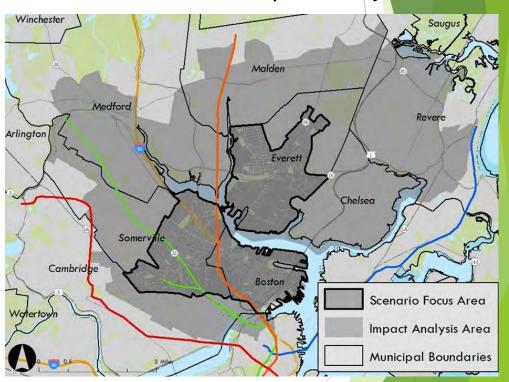


#### Analysis Results: Regional & Local

Regional



Local
Scenario Focus and Impact Analysis Area





# Results: Person Trips & Mode Shares

- All comparisons are between Alternative 2 (Planned Growth) and the Final Package
- Impact Area Trips
  - > Trips overall increase 9%
  - SOVs reduce by 6%
  - > HOVs increase by 4.5%
  - Walk/Bike mode increases by 28%
  - > Transit increases by 29%



#### Results: Regional Transit

	2016	2040				
			Final			
Regional	Existing	No-build	Package	Delta	% Change	
CR	106,000	126,100	126,600	500	0%	
RTL	800,000	1,024,000	1,069,000	45,000	4%	
BRT	30,000	69,300	110,300	41,000	59%	
Buses	360,000	428,400	483,100	54,700	13%	
Ferry	4,500	6,300	6,900	600	10%	
All Transit	1,300,500	1,654,100	1,795,900	141,800	9%	

CR = Commuter Rail

RTL = Rapid Transit Lines (Orange, Red, Blue, & Green

BRT = Bus Rapid Transit (Silver Line routes)

Buses = MBTA local and express buses

Ferry does not include service to the casino



#### Results: Silver Line

Glendale Square to North Station Route

Daily Boardings = 13,400

Major Stops are N. Station and Casino

Chelsea to Kendall Square Route

Daily Boardings = 27,600

Major Stops are Sullivan Sq., Kendall, and Casino





#### Results: Orange Line

- Orange Line AM Peak Boardings Delta = 14,100
- Orange Line Daily Boardings Delta = 38,600
- Stations experiencing the largest increase:
  - North Station, Sullivan Square, & Assembly Square
  - > Transfer activity increases at North Station
- Crowding: headway improvements offset any increases in peak load





#### Results: Local Buses

- Land use policy on parking spaces, bus modifications, and new routes drive bus ridership increase of 54.7k.
- Four new routes attract 14,000 daily riders.
- Route 105 and Rte. 109 experience a loss in ridership due to the routes being truncated and BRT service replacing segments of their routes.





#### Results: Roadway

#### Final Package Impact Area Benefits

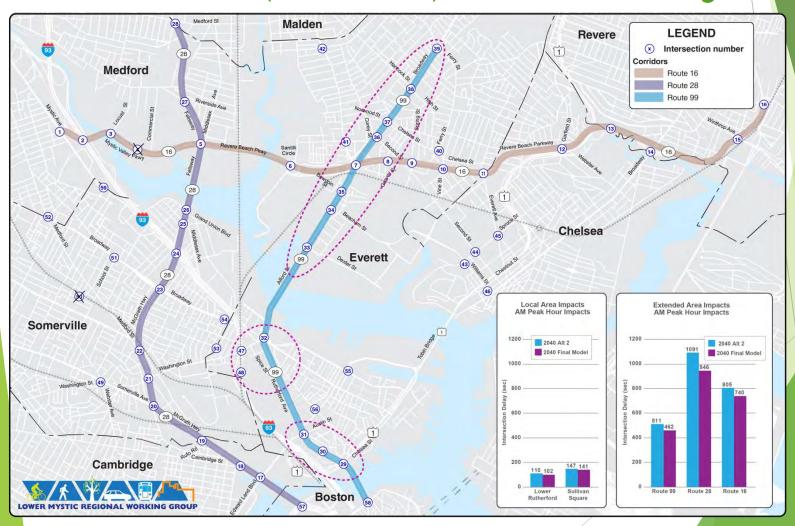
- VMT decreases by 1%
- VHT decreases by 2%
- Everett receives the largest benefit with a 4% VMT and 7% VHT daily reduction due to the final package





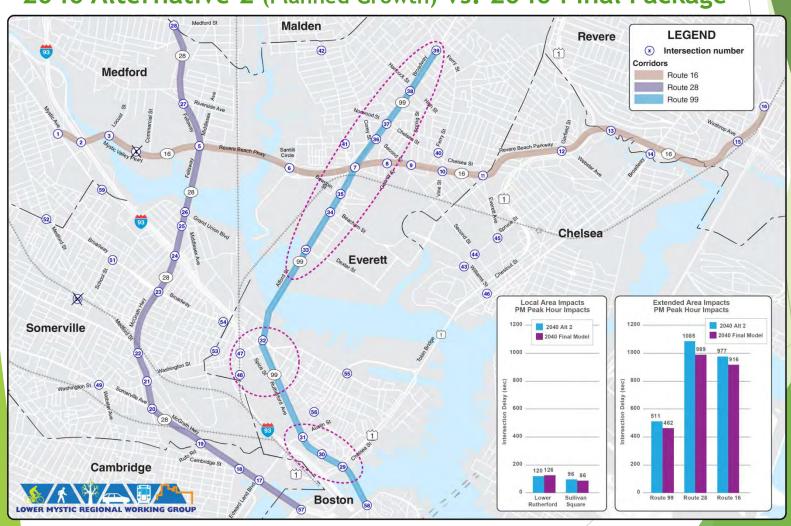
# Local and Extended Area Impacts AM Peak Hour

2040 Alternative 2 (Planned Growth) vs. 2040 Final Package



# Local and Extended Area Impacts PM Peak Hour

2040 Alternative 2 (Planned Growth) vs. 2040 Final Package



#### **Change in Corridor Delays**

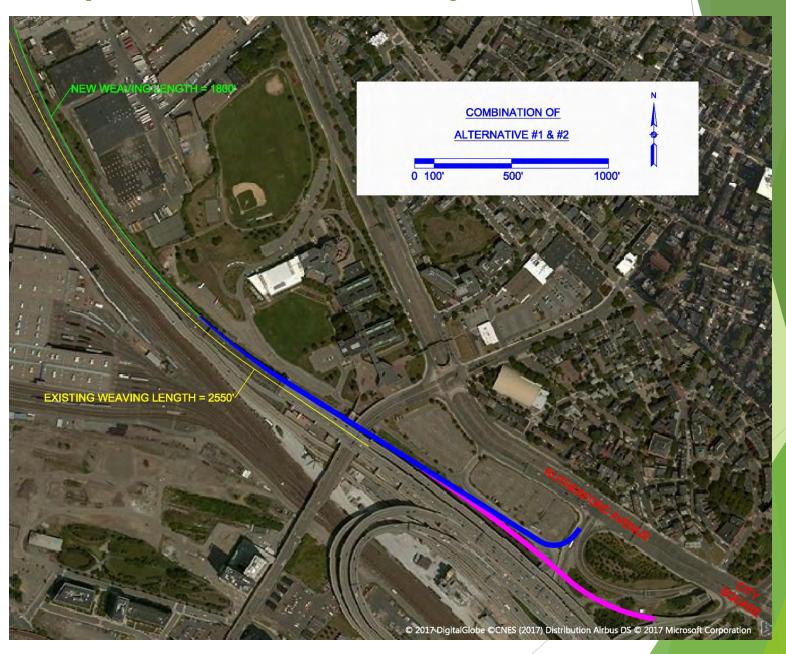
2040 Alternative 2 (Planned Growth) vs 2040 Final Package

	AM Peak Period			PM Peak Period		
Corridor	Alt. 2	Final	% Change	Alt. 2	Final	% Change
Lower Rutherford Avenue (Chelsea Street to Austin Street)	110	102	-7%	120	126	5%
Sullivan Square	147	141	-4%	96	96	-10%
Route 99 (Broadway)	511	462	-10%	511	462	-10%
Route 28 (McGrath Highway and Fellsway)	1,091	946	-13%	1,085	989	-9%
Route 16 (Revere Beach Parkway)	805	740	-8%	977	916	-6%

<sup>\*</sup> Delays are in seconds per vehicle.



#### Proposed I-93 On-Ramp

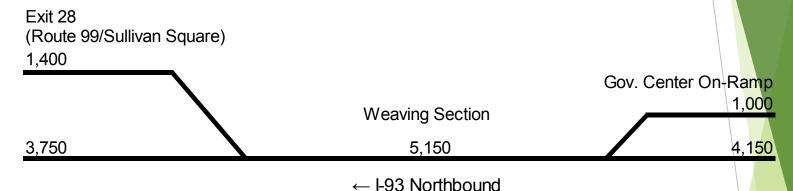


#### New I-93 On-Ramp AM and PM Peak Hour Volumes 2040 Final Model

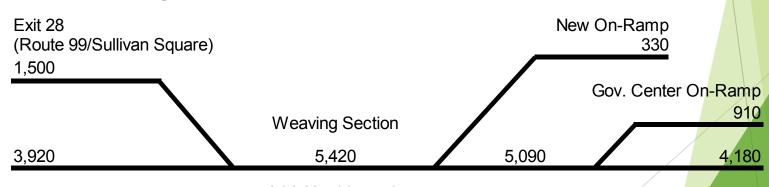


## New I-93 On-Ramp AM Peak Hour Volumes

Alternative 2 (Planned Growth)



#### Final Package

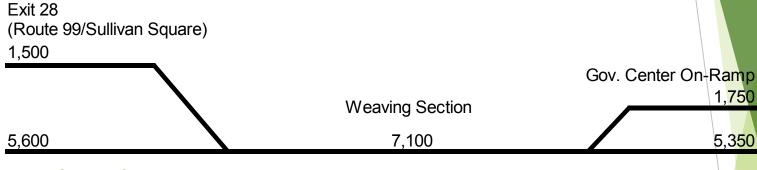


← I-93 Northbound



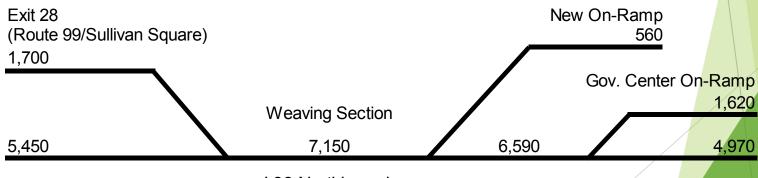
## New I-93 On-Ramp PM Peak Hour Volumes

Alternative 2 (Planned Growth)



Final Package

 $\leftarrow$  I-93 Northbound



← I-93 Northbound



#### New I-93 On-Ramp:

#### **Level-Of-Service Analysis**

2040 Alternative 2 (Planned Growth) vs 2040 Final Package

	AM Peal	k Period	PM Peak Period		
Analysis	Alt. 2 Final		Alt. 2	Final	
Scenarios	Gov. Center to Exit 28	New Ramp to Exit 28	Gov. Center to Exit 28	New Ramp to Exit 28	
Level of Service	D	Е	F	F	
Density (pc/mi/ln)	28.7	41.1	51.6	58.9	
Average Speed (mph)	51	42	36	35	



#### I-93 NB Ramp Takeaways

- Provides easier access to I-93 northbound for Charlestown and north Boston motorists
- Affects traffic operations at City Square, Route 1, and Austin Street intersections
- Impacts I-93 due to new short weaving section



# Thank you Questions and Comments



# Bus Routes that Transfer to/from Orange Line

#### 2016 Existing Conditions

People walk, drive, park or get dropped off Bus Feeders

Route 90 (Davis to Wellington) has a 34% transfer rate 1,200 daily riders

Route 104 (Malden to Sullivan Sq.) has a 58% transfer rate 4,000 daily riders

Route 105 (Malden to Sullivan Sq.) has a 40% transfer rate 1,000 daily riders

Route 109 (Linden Sq. to Sullivan Sq.) has a 35% transfer rate 3,300 daily riders

Orange Line has 166,000 daily 1-way riders

#### • 2040 No-build Conditions (Alternative 2)

Many bus routes increases 15% to 25% Orange Line increase around 30%



# Orange Line Capacity Discussion

#### 2016 Existing Conditions

6 minute headways

25,000 people in the peak 3 hours

8,300 people in the peak 1 hour

84% of Orange Line users enter and exit from the line

#### 2040 No-build Conditions (Alternative 2)

4.5 minute headways

1 person per 3.11 sq. ft.

33,500 people in the peak 3 hours

11,200 people in the peak 1 hour

75% of Orange Line users enter and exit from the line

More transferring to Red Line (Cambridge and Seaport)



#### **Orange Line Crowding**

